WHAT IS CLAIMED IS:

1. A supersonic aircraft comprising:

an aerodynamic body;

a plurality of fuel tanks contained within the aerodynamic body;

a fuel transfer system communicatively coupled to the plurality of fuel tanks and capable of transferring fuel among the plurality of fuel tanks;

at least one sensor capable of indicating a flight parameter; and

a controller coupled to the at least one sensor and the fuel transfer system, the controller capable of transferring fuel among the plurality of fuel tanks and adjusting the aircraft center of gravity to reduce trim drag.

2. The aircraft according to Claim 1 wherein:

the controller is capable of transferring fuel among the plurality of fuel tanks to adjust the aircraft center of gravity to modify the aircraft lift distribution and reduce trim drag while attaining an attenuated aircraft sonic boom.

3. The aircraft according to Claim 1 wherein:

the controller is capable of transferring fuel among the plurality of fuel tanks to adjust the aircraft center of gravity to reduce trim requirements and increase aircraft controllability.

4. The aircraft according to Claim 1 wherein:

the controller is capable of transferring fuel among the plurality of fuel tanks to adjust the aircraft center of gravity to maintain aircraft stability during flight.

5. The aircraft according to Claim 1 wherein:

the controller is capable of transferring fuel among the plurality of fuel tanks to adjust the aircraft center of gravity and adjust the aircraft longitudinal lift distribution throughout the flight envelope to maintain a low-boom, low-drag trim condition.

6. The aircraft according to Claim 1 wherein:

the controller transfers fuel among the plurality of fuel tanks to adjust the aircraft center of gravity in compliance with control laws to stabilize the aircraft and provide satisfactory handling qualities to a pilot.

7. The aircraft according to Claim 1 wherein:

the controller transfers fuel among the plurality of fuel tanks to adjust the aircraft center of gravity to an aft position, causing aircraft trim for a low sonic boom condition with insignificant trim drag penalty.

8. An automated fuel transfer system for usage in a supersonic aircraft including a fuselage and wing, the automated fuel transfer system comprising:

a plurality of fuel tanks distributed within the wing and/or the fuselage;

a plurality of pumps coupled to the plurality of fuel tanks and capable of transferring fuel among the plurality of fuel tanks;

at least one sensor capable of indicating a flight parameter; and

a controller coupled to the at least one sensor and the plurality of pumps, the controller capable of transferring fuel among the plurality of fuel tanks to modify the aircraft lift distribution to reduce the aircraft sonic boom.

9. The system according to Claim 8 wherein:

the controller is capable of transferring fuel among the plurality of fuel tanks to adjust the aircraft center of gravity to adjust the aircraft center of gravity and reduce trim drag and increase aircraft range.

10. The system according to Claim 8 wherein:

the controller is capable of transferring fuel among the plurality of fuel tanks to adjust the aircraft center of gravity to reduce trim criteria and increase aircraft controllability.

11. The system according to Claim 8 wherein:

the controller is capable of transferring fuel among the plurality of fuel tanks to adjust the aircraft center of gravity to maintain aircraft stability during flight.

12. The system according to Claim 8 wherein:

the controller is capable of transferring fuel among the plurality of fuel tanks to adjust the aircraft center of gravity and adjust the aircraft longitudinal lift distribution throughout the flight envelope to maintain a low-boom, low-drag trim condition.

13. The system according to Claim 8 wherein:

the controller transfers fuel among the plurality of fuel tanks to adjust the aircraft center of gravity in compliance with control laws to stabilize the aircraft and provide satisfactory handling qualities to a pilot by evaluating closed-loop aircraft responses to atmospheric disturbance.

14. The system according to Claim 8 wherein:

the controller transfers fuel among the plurality of fuel tanks to adjust the aircraft center of gravity so that fuel in the forwardmost tanks is consumed first, and configuring the aircraft trim on attaining cruise condition at maximum aft center-of gravity for a reduced sonic boom condition.

15. An aircraft control system for usage in a supersonic aircraft including a fuselage and wing, the control system comprising:

a plurality of control effectors coupled to the wing;

a plurality of fuel tanks distributed within the wing and/or the fuselage,

a plurality of pumps coupled to the plurality of fuel tanks and capable of transferring fuel among the plurality of fuel tanks;

a plurality of actuators coupled to the control effectors;

at least one sensor capable of indicating a flight parameter; and

at least one vehicle management computer coupled to the at least one sensor, the plurality of pumps, and the plurality of actuators, the at least one vehicle management computer capable of managing the control effectors and transferring fuel among the plurality of fuel tanks to adjust aircraft trim and center of gravity position to operate the aircraft in at least two flight modes, the flight modes having different trim drag and sonic boom performance.

16. The system according to Claim 15 wherein:

the at least one vehicle management computer operates the aircraft in a maximum range, maximum Mach over water mode with control effectors deployed for relatively reduced trim drag and center of gravity positioned relatively forward, and operates the aircraft in a slightly reduced range, relatively lower Mach over land mode with control effectors deployed for a slight increase in trim drag and center of gravity positioned relatively aft to reduce sonic boom.

17. The system according to Claim 15 wherein:

the at least one vehicle management computer controls the fuel tanks to burned in sequence for aircraft center of gravity so that fuel in the forwardmost tanks is consumed first, and configuring the aircraft trim on attaining cruise condition at a maximum aft center-of gravity for a reduced sonic boom condition.

18. The system according to Claim 15 further comprising:

a plurality of fuel boost pumps positioned outside of the fuel tanks for the ease of accessibility and maintenance without defueling the aircraft, the fuel boost pumps including dual boost pumps in forward and aft fuselage feed tanks, fuel from the forward fuselage tank being supplied to engines first to begin shifting the aircraft center of gravity aft in preparation for supersonic flight, upon fuel in the forward fuselage tank being consumed to a predetermined level aft fuselage dual boost pumps continuing supplying fuel to the engines.

19. The system according to Claim 15 further comprising:

a fuel scavenge system that removes remaining fuel in fuel tanks using a cross feed valve connecting left and right fuel feed manifold in the event of total fuel failure on either side; and

an intertank shut off valve between forward and aft fuselage tanks for transferring fuel from one side to the other during the flight due in event of fuel imbalance.

20. The system according to Claim 15 wherein:

the controller transfers fuel among the plurality of fuel tanks to adjust the aircraft center of gravity to:

adjust the aircraft center of gravity to reduce trim drag and increase aircraft range;

adjust the aircraft center of gravity to reduce trim criteria to increase aircraft controllability;

adjust the aircraft center of gravity to maintain aircraft stability during flight; and

adjust the aircraft center of gravity and adjust the aircraft longitudinal lift distribution throughout the flight envelope to maintain a low-boom, low-drag trim condition.